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09/912,070	07/24/2001	Motoyuki Fujimori	U 013566-9	3280

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EXAMINER
SEVER, ANDREW T

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 05/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/912,070	Applicant(s) FUJIMORI, MOTOYUKI
	Examiner Andrew T Sever	Art Unit 2851

-- Th MAILING DATE of this communication app ars on th cover sh et with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 July 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the insulating sheet must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because it is not clear what several numbers, such as 9 in figure 3, are pointing to. Please draw arrows all the way to the referenced part and use brackets where more then on part is included within a part. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "8" has been used to designate both lamp/light source in figures 8, 11,12 and a replacement cover in figure 2. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities: The detail description is extremely difficult to follow. The description should be revised to explain each

figure of the drawings individually and not jump between figures frequently and without notice to the reader.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 9 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear what a resilient member is. For purposes of a prior art search, it will be assumed that any fastening means is a resilient member.

7. Claim 17 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear what the housing is, the language of claim 17 implies that the housing is the lamp replacement cover, however the specification refers to the housing as being the inner case, and as a part the holds the light source. Further applicants Figure 2 shows the replacement cover labeled as part 8, which is defined in the specification to be the lamp itself. Therefore one of ordinary skill in the art would not know which part of the projector to make of resin.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. The term "near" in claims 8 and 13 is a relative term, which renders the claim indefinite. The term "near" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear where the driver board must be disposed, near can range from touching to having something in between the board and the case.

10. The term "opposite" in claim 18 is a relative term, which renders the claim indefinite. The term "opposite" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is not clear what qualifies as opposite.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-3, 6-11, 13, 14, 16, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Furuhata et al. (US 5,951,136.)

Furuhata et al. Teaches in figure 4 an optical system (10) including a light source (8), an optical lens unit (9), electro-optical devices (925R, 925B, 925G) that modulate the color beams in accordance with image information, and a color beam combining optical system (910) that

combines the color beams, and a projection lens (6). Optical lens unit (9) contains: a color beam splitting optical system (941, 943, 942, 971, 946) which transmits three color beams to the electro-optical devices (925R, 925B, 925G) that modulate the color beams in accordance with image information. With regards to applicant's claim 9, as nearly as can be understood by the term "resilient members", it is inherent that resilient members attach the mirrors and lenses that constitute the optical system.

Further Furuhata teaches in figure 3 that the optical lens unit (9) is enclosed by an inner case (which is an integrated box-shaped body as claimed in applicant's claim 2) where the optical components constituting the optical system, both those internal to the optical lens unit and those external, such as the prism and projection lens are attached (as will be described in more detail below), that forms an enclosure (when the projector is assembled, by attaching the optical system (10) to the bottom case (2,4)) with one of the outer cases (2,4.) Figure 1A of Furuhata teaches that outer case consists of two vertically separable outer cases (3 and 4) that are separated at a line near to the indicator 3b. With regards to applicant's claim 3, figure 3 of Furuhata clearly shows that the projection lens (6) is attached to the inner case not the outer case.

With regards to applicant's claims 6, 7, and 8, Furuhata teaches in column 6 lines 25-36 that the color beam combining optical system is a prism. Column 6 lines 25-36 also teaches that the prism unit (910) and the electro-optical devices (925R, 925B, 925G) are attached to the inner case, specifically via a thick die cast head plate of magnesium or aluminum and is fixed to the light guides 901, and 902, which form the walls of the inner case of the optical lens unit. Further Figure 6 shows that the electro-optical devices which are attached to prism (910) and the prism are arranged in a recessed portion formed adjacent to the projection lens (6) on a top

outside of the inner case as is claimed in applicant's claim 7. Figure 7 shows that a fan (15) and its air vent (231) are disposed near a portion where the prism is attached to the inner case.

With regards to applicant's claims 10,11, and 13, figure 3 teaches a circuit board (11) and a video board (13) that control the projector, with the video board specifically controlling the electro-optical device. The circuit board (11) and video board (13) are shown to be disposed on the top outside of the inner case near the outer case to which the inner case is fixed as is claimed by applicant's claims 11 and 13. Although the placement of the cables that electrically connect the electro-optical device to the video board (13) is not explicitly taught by Furuhata as is claimed by applicant's in applicant's claim 10, it is inherit that a cable that electrically connects the electro-optical device to the video board (13) would be placed such that it is led out from one side of the electro-optical device on the nearer side to the driver board, as any other placement of the cable would be a waste of cable. (See Yamaguchi et al. (US 6,132,049) figure 8 for an example.)

With regards to applicant's claims 14, 19, and 20, it is inherent that the outer case to which the inner case is fixed has functions of positioning and supporting the optical components and it is inherent that both the inner case and outer cases are constructed of either resin or metal.

With regards to applicant's claim 16, Furuhata teaches in column 6 lines 51-67 and figures 2b and 3, that the lamp (8 and thus its housing 802) are placed in a rectangular area formed by the rear end of the power unit (7) and the indent in the optical lens unit (9). Further a lamp-replacement cover (27) is fixed with a screw to the bottom of wall (4a) of the lower case (4), allowing for the lamp to be easily replaced, simply by loosening the screw and removing the cover (27) to expose the light source lamp unit.

Claim Rejections - 35 USC § 103

13. Claims 4, 5, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuhata et al. (US 5,951,136) as applied to claims 1-3, 6-11, 13, 14, 16, 19, and 20 above, and further in view of Fujimori (US 5,806,952.)

Furuhata et al. teaches, as is described in more detail above, an optical system including a light source, an optical lens unit, electro-optical devices that modulate the color beams in accordance with image information, and a color beam combining optical system that combines the color beams, and a projection lens. The optical lens unit contains: a color beam splitting optical system which transmits three color beams to the electro-optical devices that modulate the color beams in accordance with image information. Further Furuhata teaches that the optical lens unit is enclosed by an inner case where the optical components constituting the optical system are attached, that forms an enclosure with one of the outer cases. Furuhata teaches that outer case consists of two vertically separable outer cases.

Furuhata, however, does not teach disposing a sheet shaped thermal insulation material between the inner case and outer case that accommodate the color beam splitting optical system. Fujimori (6,952) teaches in figure 2B a projection type display device having an optical lens unit (9) that is enclosed in an inner case much like Furuhata's optical lens unit. Fujimori (6,952) further teaches in column 7 lines 41-63 the use of an insulation panel made of resin to cover the inside walls of the shield case. Fujimori (6,952) further teaches in figures 2A and 2B and placing a fan (790) in a notch in the driver board for cooling the electro-optical devices underneath it. The use of this resin based insulation and the cooling fan, will help prevent the

optics inside optical lens unit (9) from distorting due to uneven heating. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to line the outer case of Furuhata with an insulating panel as Fujimori (6,952) teaches and to further reduce the amount of heat impinging on the light valves by placing an exhaust fan in a notch in the driver board for cooling the electro-optical devices underneath it.

With regards to claim 5, since figure 2B shows optical lens unit (9) as being rectangular, it would be obvious to one of ordinary skill in the art at the time the invention was made to make Fujimori's (6,952) insulating panel sheet shaped, since this would best conform to the lens unit and would also take up the least amount of room, while insulating all of the color beam splitting optical system, that the insulating panel is provided to protect from excessive heat.

16. Claim15 rejected under 35 U.S.C. 103(a) as being unpatentable over Furuhata et al. (US 5,951,136) as applied to claims 1-3, 6-11, 13, 14, 16, 19, and 20 above.

Furuhata et al. teaches, as is described in more detail above, an optical system including a light source, an optical lens unit, electro-optical devices that modulate the color beams in accordance with image information, and a color beam combining optical system that combines the color beams, and a projection lens. The optical lens unit contains: a color beam splitting optical system which transmits three color beams to the electro-optical devices that modulate the color beams in accordance with image information. Further Furuhata teaches that the optical lens unit is enclosed by an inner case where the optical components constituting the optical system are attached, that forms an enclosure with one of the outer cases. Furuhata teaches that outer case consists of two vertically separable outer cases.

Furuhata, however, does not teach that the inner case and the outer case that accommodates the color beam splitting optical system are fixed with screws to each other. However, the use of screws to attach an inner case to an outer case is well known in the art, and would have been obvious to one of ordinary skill in the art at the time of the invention to use as screws allow for easier assembly that minimizes unwanted movements that can plague other methods for attaching an inner case to an outer case such as an adhesive.

15. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuhata et al. (US 5,951,136) as applied to claims 1-3, 6-11, 13, 14, 16, 19, and 20 above, and further in view of Kurosawa (US 6,345,896).

Furuhata et al. teaches, as is described in more detail above, an optical system including a light source, an optical lens unit, electro-optical devices that modulate the color beams in accordance with image information, and a color beam combining optical system that combines the color beams, and a projection lens. The optical lens unit contains: a color beam splitting optical system which transmits three color beams to the electro-optical devices that modulate the color beams in accordance with image information. Further Furuhata teaches that the optical lens unit is enclosed by an inner case where the optical components constituting the optical system are attached, that forms an enclosure with one of the outer cases. Furuhata teaches that outer case consists of two vertically separable outer cases.

Furuhata further teaches, that the lamp is placed in a rectangular area formed by the rear end of the power unit and an indent in the optical lens unit. Further a lamp-replacement cover which applicant calls its housing is fixed with a screw to the bottom of wall of the lower case, allowing for the lamp to be easily replaced, simply by loosening the screw and removing the

cover to expose the light source lamp unit. Furuhata, however, does not teach that the housing is formed of a resin.

Kurosawa in figure 6 teaches a projector (1) that has a lamp unit (8) that is place in a rectangular area (504) formed by the rear end of the power unit and an indent in the optical lens unit. Further a lamp-replacement cover is provided (502), allowing for the lamp to be easily replaced. Kurosawa also teaches in column 8 lines 41-54, that the lamp-replacement cover (502) or housing is made of resin. Kurosawa explains that this keeps the housing from heating up to such an extent as to interfere with handling, when the light needs replacing. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use resin for constructing the housing in order to gain the benefits of resin's heat insulating properties.

15. Claim18 rejected under 35 U.S.C. 103(a) as being unpatentable over Furuhata et al. (US 5,951,136) as applied to claims 1-3, 6-11, 13, 14, 16, 19, and 20 above, and further in view of Edmonson et al. (US 5,313,234).

Furuhata et al. teaches, as is described in more detail above, an optical system including a light source, an optical lens unit, electro-optical devices that modulate the color beams in accordance with image information, and a color beam combining optical system that combines the color beams, and a projection lens. The optical lens unit contains: a color beam splitting optical system which transmits three color beams to the electro-optical devices that modulate the color beams in accordance with image information. Further Furuhata teaches that the optical lens unit is enclosed by an inner case where the optical components constituting the optical system are attached, that forms an enclosure with one of the outer cases. Furuhata teaches that

outer case consists of two vertically separable outer cases. Furuhata, however, does not teach that an insulating coating film is applied to a portion opposite to the light source in the inner case.

Edmonson teaches in figure 5 a projector having a hot compartment (50) and a cold compartment (60). The hot compartment contains the light source (63) while the cold compartment contains the light modulation panel (100) among other things. In column 2 lines 56-68, Edmonson further teaches that these two compartments are separated by thermally insulating interior housing walls (22 and 24), which can be formed from a variety of materials. Since depositing an insulating coating film on a material (such as aluminum) is a well known way to impart thermally insulating properties to an interior housing wall made of such things as aluminum, it would have been obvious to one of ordinary skill in the art at the time the invention was made to thermally insulate a portion opposite to the light source in the inner case with an insulating coating film, in order to insure that excess heat from what Edmonson calls the "hot compartment" does not reach and affect the optics in what Edmonson calls the "cold compartment" in Furuhata's projector.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US patent 6,132,049 to Yamaguchi et al. shows an optical lens system with a rectangular inner case that forms an enclosure with a surface.

The following three Fujimori and Fujimori et al. patents teach structures similar or identical to those claimed in the present application.

US patent 5,676,442 to Fujimori

US patent 6,364,492 to Fujimori et al.

US patent 5,651,599 to Fujimori et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 703-305-4036. The examiner can normally be reached M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell Adams can be reached at 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

AS
May 7, 2002

RUSSELL ADAMS
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